



Spotlight

Intelligent Transportation Systems (ITS) apply advances in information processing, communications, and system control technologies to make our existing transportation system safer and more efficient. As a center of ITS expertise, the Volpe Center has been supporting a number of U.S. DOT efforts. This research was recently

highlighted at the Intelligent Transportation Society of America's (ITS America) ninth annual meeting and exposition, ITS '99, held in Washington, DC. Volpe staff from a several Divisions presented papers, moderated panels, participated in committee meetings, and gathered stakeholder input in support of their work. These projects are sponsored by the DOT ITS Joint Program Office, in conjunction with such other DOT agencies as the National Highway Traffic Safety Administration, the Federal Railroad Administration (FRA), the Federal Transit Administration (FTA), and the Federal Highway Administration (FHWA).

Ms. Anya Carroll, of the Accident Prevention Division, gave an oral presentation entitled, "Highway-Rail Grade Crossing Applications of ITS," at the Rail Applications of ITS: Evaluation and Activities session. Ms. Carroll's talk presented a five-year historical perspective of research towards improving safety at rail-highway grade crossings. Several ongoing initiatives were also discussed including tests of off-track train and highway vehicle detection system technologies scheduled for this summer at the Transportation Technology Center Inc., in Pueblo, CO, and a cross-cutting study of seven ITS highway-rail grade crossing high priority demonstration projects scheduled to be finalized in December 1999.

Dr. Wassim Najm, also of the Accident Prevention Division, gave an oral presentation entitled, "Safety Benefits Assessment of Intelligent Vehicle Safety Systems," at the Emerging Analyses and Evaluations for Automatic Vehicle Control System session. His talk described the data used to estimate reductions in the number of collisions and crash-related injuries caused by the widespread use of intelligent vehicle safety systems. This novel methodology takes into account non-crash data gathered from field operational tests, during which subjects drive the test vehicles with, and then without, the assistance of these systems.

Mr. David Jackson, of the Economic Analysis Division, served as a panelist for the session, Transportation Planning Using ITS. The panel focused on integrating ITS into the metropolitan planning process. It described some of the efforts to date to ensure ITS integration, as well as identifying best practices that should be duplicated by agencies in other metropolitan areas. Mr. Jackson also presented a paper entitled, "Merging ITS with Transportation Planning."

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Director's Corner

Technological innovation will be a major force shaping the transportation system of the 21st Century. On Thursday, June 24, and Friday, June 25, 1999, the Volpe Center will host a conference on "The Spirit of Innovation in Transportation." The

conference will bring together leaders from the technology and transportation communities to consider integrated strategies to ensure continuing technological innovation in transportation. The conference will also address issues critical to achieving innovation, such as ensuring the highly skilled workforce necessary to meet our national transportation goals. The Honorable Rodney E. Slater, US Secretary of Transportation will be a keynote speaker. The conference will include the following sessions:

- Innovation: New Ways and Opportunities
- Next Generation Cybertechnology
- Alternative Vehicle/Fuel Systems for the 21st Century
- Nanotechnology
- Transportation Workforce for the 21st Century--A Challenge to Education

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Mr. Alan DeBlasio, also of the Economic Analysis Division, and Dr. Douglas Lee, of the Service Assessment Division, were panelists on the Metropolitan Model Deployment Initiatives Evaluation session. The session panel presented the latest evaluation results from the Metropolitan Model Deployment Initiative (MMDI) including the methodology and results for measuring customer satisfaction, long term and short-term costs, as well as the impact of institutional issues on MMDI deployment. Mr. DeBlasio presented, "The Metropolitan Model Deployment Initiative: Evaluating the Institutional Impacts", and Dr. Lee gave a presentation on the cost and benefits of MMDI. Mr. DeBlasio also served as the moderator for the session, Lessons Learned from Advanced Traveler Information Systems (ATIS) Procurement and Deployments, which featured partners from deployed ATIS projects who discussed lessons learned regarding procurement, institutional/political issues, and the various constraints and opportunities that commonly punctuate such projects.

Ms. Sari Radin, of the Economic Analysis Division, served as a panelist on the ITS Deployment Tracking session. The purpose of the session was to present the effort currently underway to measure the level of ITS deployment in the U.S. The metropolitan effort measures the level of deployment of nine core metropolitan ITS infrastructure components in 78 of the nation's largest metropolitan areas. The Commercial Vehicle Information Systems Network (CVISN), a related effort, measures ITS/Commercial Vehicle Operations deployment in all 50 states. The session also featured a case study of how one metropolitan area has used the ITS Deployment Tracking process as an aid in planning future ITS deployment in their region. Ms. Radin's presentation focused on CVISN deployment.

Mr. Michael Dinning, Chief of the Infrastructure Protection and Operations Division, was a panelist at a session titled, ITS Electronic Payment Systems: Deployment Challenges, where the panelists presented results from a February meeting between representatives from transportation applications (transit, toll, parking and commercial vehicles), financial institutions, and card providers. Besides discussing the results of the meeting and recommendations for addressing the identified challenges, the panel also described regional electronic payment system programs underway in many parts of the country. They concluded that the transportation industry is dominating regional electronic payment initiatives and has an opportunity to influence future partnerships with financial institutions, government agencies, universities, and other organizations.

Safety

Promote public health and safety by working toward the elimination of transportation-related deaths, injuries, and property damage.



Volpe Center Completes Summary of FRA Safety Research (FRA)

The Volpe Center recently completed a report, "Improving Railroad Safety and Rail Passenger Technology through Targeted Research and Demonstrations, 1992-1999," for the FRA's Office of Railroad Development (ORD). The ORD conducts research, development, testing, and evaluation of projects that directly support the FRA's safety responsibility and which enhance the railroad system as a significant national transportation resource. For over 25 years, the Volpe Center has been working with the FRA to improve railroad safety and performance. Summarizing ORD activities from 1992 – 1997, the report was an inter-Divisional, collaborative effort and included members of the Accident

Prevention Division, Vehicle Crashworthiness Division, High-Speed Ground Transportation Division, Structures and Dynamics Division, and Operator Performance and Safety Analysis Division. Input was also received from the Transportation Technology Center, Inc., in Pueblo, CO, and from members of the FRA, Office of Research and Development in Washington, DC. This report does not include all research and development activities undertaken; instead, it is representative of the work accomplished. The document is available for distribution starting in May 1999.

Volpe Center Conducts Grade Crossing Safety / Drivers Education Issues Workshop (FRA)

Causing 461 fatalities in 1997, collisions between motor vehicles and trains at Highway-Rail Intersections are the leading cause of deaths associated with the railroad industry. Mr. Robert McGuire, of the Accident Prevention Division, is the project leader of a multi-year FRA study on Grade Crossing Safety as it relates to Driver Education Issues. In support of this effort, the Volpe Center recently conducted a Panel of Experts Workshop in San Antonio, TX. Workshop participants included a broad cross-section of representatives from government, industry, labor, and academia from across the United States and Canada. Additionally, the workshop benefited from the input of representatives of constituencies that had not participated in past grade crossing safety training and public awareness activities, such as driving school associates and training developers. Mr. John Hitz, Chief of the Accident Prevention Division, and Ms. Anne Donnelly, of the same division, also participated in the workshop.



Volpe Center Prepares White Paper to support FRA Safety Efforts (FRA)

The three components that allow passengers to identify, reach, and operate emergency exits during a passenger train evacuation are emergency signs, emergency lighting, and Low Location Exit Path Markings (LLEPM). LLEPM typically consist of an active (electrically powered) or passive (photo-luminescent) material. When train crews are unavailable, emergency lighting fails, and immediate evacuation is necessary, the LLEPM system provides supplemental guidance (located near the floor) to passengers to evacuate the train. The effectiveness of the LLEPM systems was recently demonstrated during the March 15, 1999, passenger train accident that occurred near Bourbonnais, IL. Passengers followed the electro-luminescent floor strips installed in Superliner II cars to emergency exits. Ms. Stephanie Markos, of the High Speed Ground Transportation Division, and Mr. John Pollard, of the Operation Performance and Safety Analysis Division, prepared a White Paper on LLEPM issues for the FRA's Office of Research and Development. This paper was developed to support a Notice of Proposed Rule Making by FRA on passenger equipment. The White Paper will also serve as supporting information for a proposed LLEPM standard that was recently sent to the American Public Transit Association/Passenger Rail Equipment Safety Standards Task Force for consideration and approval.

Volpe Staff Presents Ongoing Transportation Research Activities to University Students

Recently, Dr. David Jeong, of the Vehicle Crashworthiness Division, spoke at Tufts and at Lehigh Universities, discussing the Volpe Center's research activities relating to the structural integrity of aging aircraft on both occasions. The particular topics included: (1) full-scale testing of panels resembling the fuselage of an airplane, (2) evaluation of criteria for the coalescence of multiple fatigue cracks, and (3) strain field characterization in lap splices of a retired Boeing 737 airplane. As part of the engineering curriculum, colleges and universities commonly conduct a series of seminars, at which speakers are invited to talk about recent advances in research and design. The purpose of the seminars is to provide an opportunity for both graduate students and faculty to learn and hear about a diverse range of ongoing research activities.

Mobility

Ensure that the transportation system is accessible, integrated and efficient, and offers flexibility of choices.



Presentations at Symposium on Aviation Psychology (FAA)

The Volpe Center's Operator Performance and Safety Analysis Division was well represented at the Tenth International Symposium on Aviation Psychology in Columbus, OH. As part of the division's ongoing support to the Federal Aviation Administration's (FAA) Office of Chief Scientific and Technical Advisor for Human Factors, the Division presented a poster session, and Drs. Eric Nadler and Mary Stearns presented three technical papers. The first paper presented by Dr. Stearns was entitled, "Vertical Navigation Displays: Pilot Performance and Workload During Simulated GPS Constant Angle of De-

scendent Approaches." The paper, authored by Mr. Andrew Kendra, of the Operator Performance and Safety Analysis Division, Mr. Charles Oman, of the MIT Man Vehicle Laboratory, and Dr. Stearns, focused on new ways for displaying vertical navigation and altitude information. Dr. Stearns also presented a paper entitled, "General Aviation and Controlled Flight Into Terrain Accidents: 1983-1994," which was authored by Ms. Melissa Bud, formerly a Volpe Center employee, Mr. Peter Mengert, another Division member, and Dr. Stearns. The technical paper detailed the role of controlled flight into terrain in general aviation accidents. Dr. Nadler presented a paper entitled, "User-Driven Iterative Development of Thunderstorm Forecast Products Optimized for Collaborative Decision-Making: A Discussion of Process and Interim Findings," which described the methodology and performance of collaborative weather forecasts. The symposium also included a poster session entitled, "Track Angle Error Displays Format Affects Simulated Non-Precision GPS Approach Performance and Workload," that highlighted the Division's new ways of presenting navigational information clearly and in easily understood formats.

Presentation on Using Color in Air Traffic Control Displays (FAA)

Dr. Kim Cardosi, of the Operator Performance and Safety Analysis Division, traveled to Toulouse, France, to present a paper titled "Use of Color in Air Traffic Control (ATC) Displays - The U.S. Experience" at a Technical Interchange conference sponsored by the FAA, EUROCONTROL, and France's Centre d'Etudes de la Navigation Aérienne. The purpose of the meeting was to examine a variety of Controller-Centered Human Machine Interface development issues and exchange lessons learned. In addition to the use of color on ATC displays, other issues discussed were the use of paper flight strips, and means of enhancing controllers' and pilots' situational awareness.



Volpe Center's Expertise in GPS displayed at World Bank Transport Expo '99 (PCC)

Messrs. Jon Pietrak and Henry Wychorski, of the Center for Navigation, represented the Volpe Center's technical expertise in the area of Differential Global Positioning Systems at the World Bank Transport Expo '99 held in Washington, DC. The Volpe Center's Panama Canal Project for the Panama Canal Commission was the centerpiece of the exhibit, with demonstrations of the Communications, Tracking, and Navigation System Pilot Display Software (CTAN) developed by the Center for Navigation. The CTAN system provides two-way digital communications coverage for the entire length of the Panama Canal, and has the capability to track simultaneously well over 100 vessels carrying CTAN transponders. Actual recorded transits were displayed in order to highlight the superior performance, versatility, and adaptability of this technology.

Volpe Center participates in ITS Massachusetts (ITS JPO)

Mr. Gary Ritter, of the Policy and Technology Analysis Division, chaired the ITS Massachusetts 4th Annual Meeting and Conference panel session on "A Federal Vision of ITS." Panelists included Mr. Daniel Berler of the DOT ITS Joint Program Office, Mr. Richard Doyle, Administrator of the FTA Regional Office, and Mr. Peter Markle, the Massachusetts FHWA Administrator. Also attending was Deputy Secretary Mortimer Downey, who, in his keynote speech, highlighted DOT's efforts to update the National ITS Program Plan and other FHWA and FTA activities in Massachusetts.

Economic Growth & Trade

Advance America's economic growth and competitiveness domestically and internationally through efficient and flexible transportation.



Volpe Staff Complete Demonstrations of the Lease Information Management System (FAA)

The FAA is one of the major property acquisition and holding agencies in the federal government. It manages approximately 4,000 leases for facility land sites and buildings, as well as various easement and right-of-way real estate instruments. In addition, it owns property valued at approximately \$2 billion dollars. To support the FAA's management of these assets, the Center is working with the FAA's Resource Division in the design, development, and deployment of the Lease Information Management System (LIMS). Mr. Bob Stouffer, of the Strategic Management Division, led a team of Volpe personnel in the demonstration of the LIMS Prototype to real estate and budget personnel in the FAA's Eastern Region. In addition to the demonstration of the prototype, the staff ac-

quired new lease documents to update the LIMS database, and discussed alternative ways regional personnel can supply new documents. This effort completed the prototype demonstrations for all nine FAA regions, as well as FAA headquarters.

Volpe Supports United States Postal Service Hovercraft Program (USPS)

Part of the Volpe Center's environmental support to the United States Postal Service (USPS) is investigating the use of Hovercraft for mail delivery in Alaska. The USPS is exploring, over a two-year period, the potential use of Hovercraft to transport bypass mail items in remote arctic areas. Bypass mail is containerized or palletized food and other general merchandise. Currently, small four-to-eight passenger charter planes fly all mail daily to remote Alaskan villages. Dr. Paul Valihura, of the Environmental Engineering Division, presented a summary of a 1998 Volpe Center ecological monitoring study to seven remote Native American villages. In addition, Dr. Valihura vice-chaired a Federal Resolution Committee that oversees Hovercraft operations. The membership of the committee includes federal and state regulatory agencies, representatives from the villages, and the Association of Village Council Presidents.

Director's Corner Continued.....

Other lead speakers include Deputy Secretary of the US Department of Transportation, Mortimer Downey; Professor Brad Parkinson of Stanford University, former CEO of Trimble, Inc.; Lillian Borrone, Director of Ports, New York Port Authority; David Wohleen, President of Delphi Delco Electronic Systems; Sheila Lynch, Executive Director of the Northeast Alternative Vehicle Coalition; Dr. Juan Garces, Dow Chemical; Professor Richard Siegel, Chair, Materials Science and Engineering Department at Rensselaer Polytechnic Institute; Earl W. Stafford, President and CEO of Universal Systems and Technology, Inc; Dr. Ash Brown, National Science Foundation; and Marcia Marsh, Principal, Watson, Wyatt in New York.

Secretary Slater has stated his commitment to achieving a transportation system that is international in reach; intermodal in form; intelligent in character; and inclusive in service. President Clinton has said, "...investing in technology is investing in America's future." We at the Volpe Center are committed to working together to facilitate continuing technological innovation that ensures the transportation system that best serves all Americans. It is my hope that this conference will stimulate within the transportation community a heightened awareness and renewed commitment to innovation as a key means of meeting our national transportation goals.

Human and Natural Environment

Protect and enhance communities and the natural environment affected by transportation.



Volpe Center Hosts Human Resource Forum

As we move into the 21st Century, human resource (HR) practices need to take into account the changing nature of work and the new relationship between government and its employees. The key is developing HR practices that find common ground between the overall strategies and the needs and interests of the individual employees. Responding to these challenges, the Volpe Center, Boston area federal managers, and human resource professionals participated in the Office of Personnel Management's (OPM) Human Resources Forum for Managers and Human Resources Specialists. Dr. Richard John, Volpe Center Director, welcomed the OPM

delegation and spoke about some of the personnel management issues facing the center and the rest of the federal government as it enters the 21st century. Ms. Elisabeth Gordon, Chief of the Human Resources Management Division and President of the New England Federal Personnel Council, hosted the quarterly meeting in conjunction with the Greater Boston Federal Executive Board. Ms. Janice Lachance, Director of the U.S. Office of Personnel Management in Washington, DC, and her entire management team all attended the Forum. The distinguished panel represented OPM's leaders on current and federal workforce policy, giving the 85 plus participants a unique opportunity to raise issues with top HR decision-makers. Topics covered included improved classification/pay systems, enhanced performance management systems, flexible hiring and promotion policies, alternative personnel systems/demo projects, retirement and benefit policies, and the senior executive service. Following the forum, Dr. John escorted Ms. Lachance to the Operations Center to view two Volpe project demonstrations. Ms. Linda Whitehead, of the Surveillance and Sensors Commission Division, presented a demonstration of the Enhanced Traffic Management System, and Mr. Kam Chin, of the Automation Applications Concepts Division, showed the Center's activities on the Panama Canal project.



Deputy Secretary Briefed on Volpe Center's Current Status and Direction

During a recent visit to the Volpe Center, Dr. Richard John hosted Deputy Secretary of Transportation Mortimer Downey in a review of the Center's current status and direction that included discussions on Volpe's changing work content, workforce requirements, and benchmarking. Other participants included Ms. Marylou Batt, Mr. Downey's Special Assistant, Mr. Michael Sheehan, Volpe's NAGE chapter president, and Ms. Marilyn Mullane, Chief of the Management Systems Division. Ms. Mullane's presentation to the Deputy Secretary focused on the Center's second self-assessment using the President's Quality Award Program criteria and the lessons learned by the Volpe Center as a participant in the Office of the Secretary of Transportation's Benchmarking Study of private and public sector use of Baldrige-like criteria and self-assessments. The self-assessment presentation identified that, relative to others in the Department using the same criteria, Volpe is on par with other labs (Turner Fairbanks, FAA Technical Center) participating in the study. Additionally, Dr. Frank Hassler, Director of the Office of Strategic Programs and Resource Planning, briefed the Deputy Secretary on the status of Volpe's workforce planning (a DOT pilot project), as part of the DOT Strategic Plan's Human Resources Management strategy.

Volpe Staff to Participate in Environmental Superconference (USPS)

Mr. David Lev, Director of the Office of Environmental Preservation and Systems Modernization, and Mr. Paul Bushueff, Chief of the Automation Technology Division, traveled to Washington to attend the 3-day "Environmental Superconference." The Superconference is the leading national environmental conference designed to forge environmental solutions for the next century between government and industry. Mr. Lev co-chaired a session, and Mr. Bushueff served on a panel entitled Combining Agencies' Resources To Meet Environmental Compliance. Their attendance was part of the ongoing Volpe support for the USPS and other federal Agencies that Volpe is assisting in their development of environmental management systems.

Computer Donation Program

Ms. Lynn Murray recently addressed over 260 attendees of the annual Cambridge Chamber of Commerce banquet on the Computer Donation Program. This program, developed by the Chamber's Community Outreach Committee, utilizes the Chamber as the conduit for Cambridge businesses to donate computer equipment and furniture to the Cambridge Public School system and non-profit organizations. Thus far, over 100 pieces of equipment have been donated, reaching both the high school and a number of the elementary schools. In addition to business representatives, Congressman Michael Capuano, Cambridge Mayor Frank Duehay, and a number of Cambridge City Councilors also attended the event. In a related event, Dr. John, Ms. Murray, and Mr. Philip Coonley, Director of the Office of Administrative Services, attended a reception at the Harvard Faculty Club in honor of Cambridge School Volunteers. Mayor Duhey and Superintendent of Schools Bobbie D'Alessandro also attended.